

Ocean Prediction Center

2004 Accomplishments

1. Introduction

The Ocean Prediction Center (OPC) had a very fruitful year in both achievement accomplished and recognition received. The Center was the recipient of the Department of Commerce Bronze Medal for its superior actions during Hurricane Isabel. It also had a banner year in outreach activities ranging from boat shows to safety-at-sea talks, which included such groups as professional mariners and recreational boaters. The Center also provided emergency support to both the U. S. Coast Guard for a sea-air rescue operation and to the NOAA Office of Response and Restoration (HAZMAT) in support of hazardous material spills.

A major achievement was the conclusion of a two-year effort to provide the public with a unified surface analysis. This chart represents the best efforts of the various parts of the National Weather Service (NWS) to provide the public with the most accurate and consistent analysis of the surface weather from the east coast of Asia to the west coast of Europe north of the equator. None of this could have been done without the hard work and dedication of the OPC staff.

2. Major Accomplishments

OPC provides Unified Surface Analysis - OPC implemented a new system for creating an analysis chart of the surface weather for the continental U.S. and adjacent oceans. The chart, called the NWS Unified Surface Analysis, became operational June 14, 2004. It integrates the individual analysis efforts of NWS' OPC, Tropical Prediction Center (TPC), Hydrometeorological Prediction Center (HPC), and the Honolulu Forecast Office. This integration permits a sharper focus for each center in its area of responsibility, results in an elimination of duplication of effort, and allows staffs more time to spend on additional activities. The analysis, which shows the major weather systems over an area extending westward from the west coast of Europe to the east coast of Asia and northward from the Equator, is produced every six hours and is available at <http://www.opc.ncep.noaa.gov/UA.shtml>.

3. Emergency Response

Support to NOAA HAZMAT in the Atlantic - On February 29, HAZMAT contacted the OPC regarding a 570-foot tanker, the *Bow Mariner*, which sank due to an onboard explosion earlier in the evening in the offshore waters approximately 55 miles east of Chincoteague Island, VA. The *Bow Mariner* was carrying 3.5 million gallons of ethanol, 48,000 gallons of stored diesel fuel, and 193,000 gallons of fuel oil. HAZMAT requested OPC provide site-specific marine forecasts of a variety of parameters that include winds and waves. One purpose of these forecasts was to support HAZMAT models such as GNOME, which predicts the movement of surface oil. The output is a set of maps showing the expected 24-hour movement of the oil spill. The OPC forecasts of winds and sea state were also used by HAZMAT's ADIOS II oil fate model to estimate the amount of oil that evaporated and dispersed into the water column.

The OPC forecasts helped answer two key operational questions: 1) is it safe to be out there and 2) how effective will field operations be given the environmental conditions?

Both of these questions are of prime concern to the USCG On-scene Coordinator. As a result the OPC forecasts are a crucial part of the on-scene operational briefing and the planning for ship operations relies heavily on the OPC winds and sea state forecasts. For example, the NOAA vessel *Rude* has been receiving OPC forecasts through HAZMAT to plan their operations. Other vessels involved with the search and rescue, and now with the oil skimming operations, have used the forecasts for their on-water operations. The OPC staff continued to provide forecasts throughout the HAZMAT emergency.

Request for Coast Guard Support - On May 20, OPC received a request for support to the USCG station in Norfolk, VA. The request related to planning a search operation for a boat reported missing near 34N 46W. A number of OPC charts were faxed to the USCG and a C130 aircraft was sent on a search mission. The vessel was eventually located near the Azores and reported safe. After the successful operation, the USCG called the OPC to offer its thanks for the very timely provision of this mission-critical weather information.

OPC Supports NOAA HAZMAT in the Pacific - While en route from Panama to Los Angeles the US Flag tanker *Vigilance* lost power October 31 and became adrift approximately 120 nautical miles southwest of Manzanillo, Mexico. The ship carried about 280,000 barrels of gasoline. The USCG contacted the NOAA Office of Response and Restoration (HAZMAT) for support determining the trajectory of this vessel - in particular where and when it would make landfall. On November 2 NOAA HAZMAT requested weather support from Ocean Prediction Center (OPC). Tow ships were dispatched and OPC provided 36 to 120 hour forecasts of winds, seas, air temperature, and visibility in support of the towing operation. The vessel was towed to safe harbour without further incident.

4. Conference Participation

OPC took part in four workshops and conferences - Joe Sienkiewicz, OPC Science and Operations Officer and Joan Von Ahn, OPC National Ocean Partnership Program contactor, attended the American Meteorological Society Annual Meeting held at the Washington State Convention Center in Seattle, Washington, January 12 –15, 2004. Joe presented a poster entitled "Scatterometer Inferred Winds in the Vicinity of the Gulf Stream". Joan's poster was entitled "Hurricane Force Extratropical Cyclones as Observed by the QuikSCAT Scatterometer". Both posters were on display as part of the 8th Symposium on Integrated Observing and Assimilation Systems for Atmosphere, Oceans, and Land Surface.

Joe and Joan also presented a poster entitled "The Operational Impact of QuikSCAT Winds at the NOAA Ocean Prediction Center" at the 2004 International Geoscience and Remote Sensing Society (IGARSS) Conference in Anchorage, Alaska, September 20-23, 2004. The conference was attended by a mix of research scientists, electrical engineers, meteorologists, and oceanographers involved in instrument design. Several sessions of the conference discussed present and future capabilities of remotely sensed ocean vector winds.

Joe also attended the 5th Annual Southern New England Weather Conference on Saturday, November 5, 2004. The NWS Weather Forecast Office (WFO) Taunton and the Blue Hill Observatory hosted the conference. The conference was held at the Dexter School in Brookline, MA. Attendance was approximately 150 students, professors, weather enthusiasts, and TV meteorologists. Joe described the research effort within the OPC to study extreme

winter storms using QuikSCAT scatterometer winds. His talk, "A Look at Winter Hurricanes", gave an overview of extreme storms and then focused on the climatology of extreme storms over the New England waters.

Jessica Morgan, NOPP contract oceanographer, attended the Mid-Atlantic Bight Physical Oceanography Meeting, November 4 and 5 at the Virginia Institute of Marine Science in Gloucester, VA. Jessica gave a talk describing the efforts within the OPC to evaluate the National Centers for Environmental Prediction (NCEP) Atlantic Ocean Forecast System being developed by the Environmental Modeling Center (EMC) Marine Modeling and Applications Branch. Approximately fifty oceanographers were in attendance from a variety of universities, National Oceanic and Atmospheric Administration (NOAA), and Naval Research Laboratory (NRL).

Dave Feit, Chief, Ocean Forecast Branch, and Scott Prorise, Senior Marine Forecaster, attended the NOAA Hurricane Conference at TPC, Miami, FL. Scott presented a paper on the OPC contributions to the 2004 hurricane season.

5. Training at Government Facilities

Twice during the year training was provided to external U.S. government facilities - Joe Sienkiewicz, was invited to speak at a one-day training session hosted by Taunton, MA, WFO on January 21. Joe spoke about the use of scatterometer winds in OPC operations and gave examples from some of the studies being conducted within the OPC.

Joe also visited the United States Coast Guard Academy (USCGA) and talked with several staff members from the Science Department. The discussion included possible synergies between OPC and the USCGA, summer intern program, and guest lecturing at the USCGA. In addition, Joe was invited to visit the University of Connecticut School (UCONN) of Ocean Sciences at Avery Point, Groton, CT. The school is a rapidly growing remote campus of UCONN and focuses on a variety of ocean studies including physical, chemical, and biological oceanography. Joe was given a tour of the campus, the Research Vessel *Connecticut*, the NOAA Undersea Research Laboratory, and buoy maintenance facilities. UCONN has partnered with the National Data Buoy Center and provides and maintains several meteorological and oceanographic buoys in Long Island Sound. The school will soon begin running a 1/2 km resolution coastal model of eastern Long Island Sound.

6. Outreach

Boat shows - OPC Director Jim Hoke joined with staff members from the New York and Philadelphia WFOs to represent NOAA at the New York National Boat Show 2004, held at the Jacob Javits Convention Center in Manhattan from December 27, 2003, to January 4, 2004.

The show provided an excellent opportunity to discuss NOAA products and services with the user community and to gain valuable insight into how these products and services might be improved. Among the positive comments, one owner of a large marina business said the NWS was “my favorite website”, while another said, “The NWS homepage is my homepage.” Many users requested an increase in the number of buoys and the provision by NOAA of high-resolution sea-surface-temperature analyses.

After working at the boat show, Jim spent a day at the WFO for the New York City area in Upton, NY. Purpose of the visit was to learn about the practical aspects of using the Interactive Forecast Preparation System (IFPS) and how OPC and the HPC can better serve the needs of the WFOs in the IFPS-National Digital Forecast Database era.

From January 15-18, Lee Chesneau, OPC meteorologist, presented basic marine weather seminars to some 600 recreational mariners at the Atlantic City Sail Expo. He made three separate presentations where he discussed OPC warning and forecast products. The presentations were well received by audiences of standing room only mariners.

The OPC worked with the Mount Holly and Upton WFOs at the NOAA Booth at the Atlantic City Powerboat Show, February 4-8, 2004. The show, one of the biggest of its type in the world, experienced its best attendance it several years. The NWS staff talked with numerous people about how to access and use various NOAA products and services and solicited feedback on how to improve them. Several of the most common suggestions were to increase the deployment of ocean buoys and to disseminate more detailed sea-surface-temperature information. The attendees, most of whom endorsed the new voices on the system, used NOAA Weather Radio heavily. The NWS crew received many unsolicited positive comments about the quality and importance of NWS products to the safety and livelihoods of the attendees. Representing the OPC this year at the show were Director Jim Hoke, outreach focal point Lee Chesneau, and forecaster Todd Shaw.

Lee Chesneau represented the OPC at the Trawler Fest Boat Show, Newport, RI, on July 8-10. Chesneau presented seminars to 50 recreational mariners about OPC warnings, analyses, and forecast products and services.

Safety at Sea - The OPC made several presentations at the annual Safety at Sea Seminar held at Alumni Hall at the U.S. Naval Academy on March 27 and 28. The U.S. Naval Academy Sailing Squadron, the Marine Trades Association of Maryland, West Marine Sales, and Cruising World Magazine hosted this event. Joe Sienkiewicz lectured on weather at sea on March 27 to a group of approximately 500 sailors. Lee Chesneau and Joe Sienkiewicz gave three one-hour seminars on the use and interpretation of OPC products to a smaller group of 125 sailors on March 28. Along with Lee and Joe, OPC forecaster George Bancroft helped staff an OPC booth on Saturday. The OPC has been represented for the past nine years at this annual event. Lee, Joe, and George were all struck by how many of the sailors expressed their appreciation for the OPC product suite and service. Many stated that they really appreciate the

names on our products and were able to now have a face with a "trusted" name.

On June 10, Joe Sienkiewicz, participated in the Bermuda Ocean Race Skippers Meeting in Annapolis, MD. Thirty-seven boats were making the 750 nautical mile trek from Annapolis, MD, down the Chesapeake to Bermuda. Approximately 100 sailors were in attendance. Joe gave out information packets and briefed the group on available NWS products, communication broadcast schedules, and ftp email receipt of NWS products.

On June 17, Joe gave a presentation on weather safety at the Skippers Meeting for the Newport to Bermuda sailboat race. The meeting was held in the Pickens Theater in Newport, RI. Nearly 300 skippers and navigators about to depart for Bermuda attended the meeting. Joe handed out information packets that consisted of United States Coast Guard (USCG) broadcast alphanumeric and radio facsimile schedules, NOAA internet sources for weather information, NWS offshore forecast zones, and examples of available OPC analyses and forecasts. Boats during the race experienced winds in excess of 30 knots while crossing the Gulf Stream.

Lee Chesneau made presentations July 12 –16, at a course given for Masters and Mates at the Maritime Institute of Technology and Graduate Studies (MITAGS), Linthicum Heights, MD. He discussed extensively the availability and use of OPC warning, analysis, and forecast products and emphasized how to apply them for safety decision-making. There were 12 students in attendance for the course.

He also took part in the Sea Education Association (SEA), August 26-30 cruise on the Brigantine *SSV Robert C Seamans*. The purpose of the cruise was to conduct oceanographic and related science studies. During the cruise he delivered 5 presentations discussing OPC warning products and services. Approximately 45 students and crew attended the seminars.

Professional outreach - On March 22, Joe Sienkiewicz spoke to approximately 45 USCGA cadets (Marine Environmental Science majors) about OPC responsibilities, products, and techniques. He specifically discussed the challenges of wave forecasting and the use of QuikSCAT winds in daily operations. Joe learned that OPC products are being used more and more at the USCGA. As Joe was walking by a class participating in a Search and Rescue (SAR) exercise he observed that all cadets were using the OPC webpage and products to devise initial search plans.

Students from the MITAGS taking the professional maritime industry required Chief Master Mates (CMM) Advanced Meteorology course visited the OPC on July 14. The 12 students in attendance were professional mariners. OPC products and services were reviewed, the analysis and forecast process demonstrated, and questions were fielded.

Lee Chesneau participated in the annual Pacific Marine Expo held in Seattle, WA, on November 10 - 12. NWS Western Region's Seattle WFO and Alaska Region headquarters and WFO Anchorage were also in attendance, sharing booth space at the Expo. Warning

Coordination Meteorologist (WCM) Ted Buehner of the Seattle WFO coordinated the combined NWS effort. Chesneau also presented two seminars for the event's sponsor. The three-day event hosted thousands of mariners from commercial fishermen, recreational cruisers and professional mariners.

Lee also participated in Workboat Expo, New Orleans, LA, on December 1 and 2. Chesneau conducted a marine weather seminar each of the two days. The seminars explained OPC operations with emphasis on warning and forecast products.

Other outreach - On March 27 in Annapolis, MD, Paul Vukits, OPC Senior Marine Forecaster, attended the annual Singles on Sailboats, Inc. "Spring Training", which is a day-long training program designed for sailors of novice, intermediate, and advanced skill levels. A total of 360 attendees from across the nation participated in four 90-minute sessions, which consisted of nine classes being taught simultaneously. Paul's session was titled "Weather by NOAA" and was attended by approximately 35 sailing students.

Lee Chesneau, participated in the South Bound Cruisers reunion in Baltimore, MD, on September 8. Two hundred mariners attended the meeting. Chesneau provided information and answered questions about the products and services of OPC.

Joe Sienkiewicz visited the NOAA Joint Hydrographic Center at the University of New Hampshire in Durham, NH. Joe gave a two-hour lecture to ocean engineering students on Marine Weather. The students were taking a class in basic seamanship being taught by Dr. John Kelley of the NOAA National Ocean Service. Approximately 12 class members and faculty attended the lectures. In addition to the lecture, Joe met with co-directors from the NOAA-UNH Coastal Response Center, Dr. Janet Campbell, Director of the UNH COOA (Coastal Ocean Observation and Analysis Center), and Dr. Colin Ware (JHC visualization activities). Joe was given short briefs on each Center's activities and discussed possible common interests with the OPC.

Lee Chesneau gave a presentation of OPC warning products and services at the St. Petersburg, FL. Sail America Expo. There were over 100 recreational mariners in attendance. Information handouts were provided for those in attendance.

He also participated in the Seven Seas Cruising Association meeting held in Melbourne, FL, November 5 - 7. Chesneau gave presentations each day discussing OPC warning products and services. Over 1000 mariners attended these presentations. He also participated in a seminar session conducted by WINLINK, a software company that facilitates PC downloads of National Weather Service (NWS) products. Dennis Decker, WCM of the nearby Melbourne WFO, also participated.

On November 8 and 9 Lee Chesneau conducted a two-day marine weather workshop. Twenty offshore cruisers who also attended the Seven Seas Cruising Association meeting attended the workshop. OPC products and services were featured extensively throughout the two-day session.

7. Special Activities

OPC Meteorologist Oceanographic Observer aboard the C/V *Oleander* -

Scott Prosis, OPC Senior Marine Forecaster, was an oceanographic observer for NOAA's National Marine Fishery Service (NMFS) aboard the C/V *Oleander* March 5-7, 2004. The *Oleander* sails between Port Elizabeth, NJ, and Bermuda. His duties included taking observations using expendable bathythermographs, transmitting the data to NMFS, obtaining surface seawater temperature data, and recording seawater salinity. On this particular voyage a film crew accompanied him from the New York Maritime Museum. The crew recorded his data collection for an educational film they are making about the North Atlantic Oscillation. The ship encountered a major storm with hurricane force winds while returning to New Jersey. Seas of 25-30 feet were encountered and Scott saw the ship's anemometer record a gust of 110 knots.

8. Media

OPC forecaster featured in *Sail Magazine* - OPC Marine Forecaster Lee Chesneau was featured in an article about marine observations in the February 2004 issue of *Sail Magazine*. Lee noted the importance of ship observations to the OPC operations and the article illustrated this by showing one of OPC's wave analysis charts.

Article submitted to *Boston Weather Almanac* by OPC - In November, Joe Sienkiewicz contributed a short article on winter hurricane force storms to the WBZ-TV Boston Weather Almanac. This almanac is widely distributed throughout New England. Meteorologist Mish Michaels (WBZ) solicited Joe's contribution. The article briefly describes some of the work completed by the OPC through National Ocean Partnership Program funded grants.

OPC Gives telephone interview - On November 7, Oregon Public Radio in Astoria, OR, interviewed Joe Sienkiewicz. Joe discussed stormy conditions off of the Oregon Coast that forced the abandonment of a schooner sailing from Hawaii to Vancouver, British Columbia. The crew was rescued by United States Coast Guard (USCG) helicopter.

9. Special Visitors

Mahina Expeditions - On March 26, John and Amanda Neal of Mahina Expeditions visited

OPC and were briefed on OPC operations. They also gave a short presentation to OPC management on their operations and needs. Mahina Expeditions offers worldwide offshore sail-training passages aboard a sailboat. The training is designed to provide students with the experience of an ocean passage and the ability to deal with heavy weather before later sailing offshore in their own boats. Because of their concern with heavy weather, Mahina Expeditions uses OPC products as an integral part of their program.

Attaché of Argentina's Navy - On August 5, Capitan Javier Valladares, the attaché of Argentina's Navy to DC, visited the OPC. After an introduction by Director Dr. James Hoke, Capitan Valladares met with Dave Feit, Chief of the Ocean Forecast Branch of the OPC. As an oceanographer, Capitan Valladares was particularly interested on the OPC activities, deep-sea research, and below surface data collection. During his visit he also met with Jose Luis Ibarrola, South American Desk fellow from Argentina, and discussed ways they could improve their operations.

10. OPC Staff as of December 31, 2004

Administration

James Hoke, Director
Kevin McCarthy, Deputy Director
Crystal Rickett, Administrative Officer
Jeanette Rolen, Secretary

Ocean Forecast Branch

David Feit, Branch Chief
Senior Marine Forecasters: Robert Oszajca, Scott Prosise, Edward Schoenberg,
Douglas Scovil, Paul Vukits
Marine Forecasters: Frances Achorn, Kevin Achorn, George Bancroft, Lee Chesneau,
Ross Van Til, James Clark, Joe Cope, Joseph Czarniecki, James Kells, David Kosier,
Hugh McRandal, David Mills, James Nolt, Michael Rowland, Todd Shaw

Ocean Applications Branch

Joseph Sienkiewicz, Acting Branch Chief/Science and Operations Officer
Curt Janota, Meteorologist Developer

Personnel Changes in 2004

Dave Chorney left OPC in January.
Ross Van Til joined OPC as a forecaster in June.
Pedro Fritz retired from federal service in September.
Dave Kosier joined OPC as a forecaster in November.



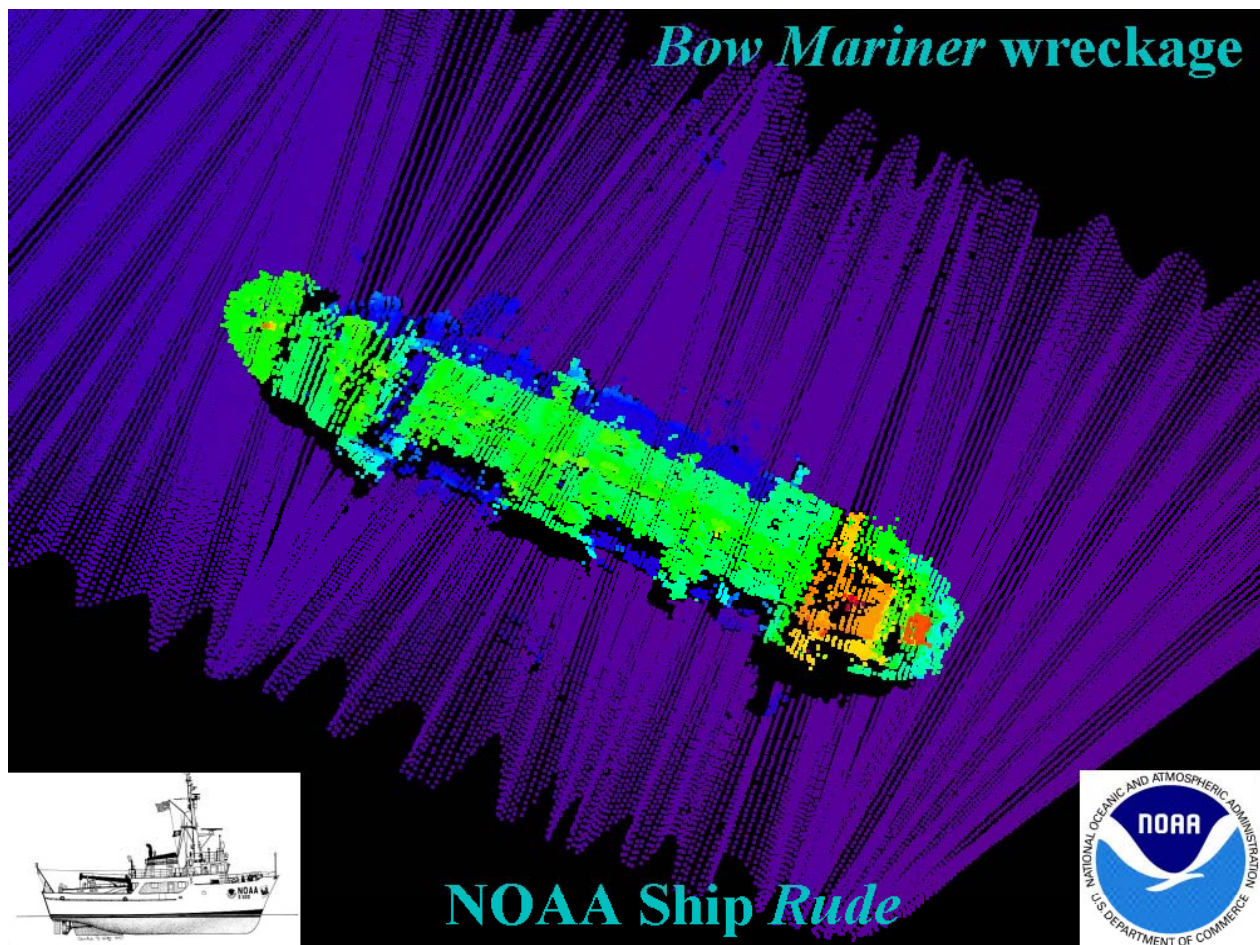
Marine Forecaster Dave Mills working at the Atlantic High Seas Desk.



Dave Feit (right), Chief of the Ocean Forecast Branch, briefing Captain Javier Valladares (left), Argentina's Naval Attaché and Jose Luis Ibarrola (back to camera), South American Desk fellow from Argentina about OPC operations.



OPC forecast staff participating in a conference call about Hurricane Ivan. Left to right: Todd Shaw, Dave Mills, Lee Chesneau, Pedro Fritz, Doug Scovil (back to camera), Bill Kneas, and Jim Clark.



This is a multi-beam sonar image taken by the NOAA ship *Rude* showing the *Bow Mariner* tanker, which sunk off the Virginia coast on February 28, 2004. OPC supported HAZMAT activities in response to the sinking. The vessel is sitting upright on the ocean floor in 260 feet of water.